

Title (en)

Reflection reducing film, optical member and optical system

Title (de)

Film zur Verringerung der Reflexion, optisches Element und optisches System

Title (fr)

Film à réduction de réflexion, élément optique et système optique

Publication

EP 2128658 A3 20110511 (EN)

Application

EP 09006854 A 20090520

Priority

- JP 2008134224 A 20080522
- JP 2008134225 A 20080522

Abstract (en)

[origin: EP2128658A2] A reflection reducing film is provided on a surface of an optical substrate, and is sequentially provided with a buffer layer and a reflection reducing layer. The reflection reducing layer includes first to eighth layers sequentially laminated from the side of the buffer layer. The first and sixth layers are made of a low-refractive index material having a refractive index in the range of 1.35 to 1.50 at the d-line, the third, fifth and seventh layers are made of an intermediate-refractive index material having a refractive index in the range of 1.55 to 1.85 at the d-line, and the second, fourth and eighth layers are made of a high-refractive index material having a refractive index in the range of 1.70 to 2.50 at the d-line.

IPC 8 full level

G02B 1/11 (2006.01)

CPC (source: EP US)

G02B 1/115 (2013.01 - EP US); **Y10T 428/24942** (2015.01 - EP US)

Citation (search report)

- [X] JP 2004198778 A 20040715 - KOGAKU GIKEN KK
- [X] JP 2007156365 A 20070621 - CANON KK
- [A] US 2005122576 A1 20050609 - YONETANI ATSUSHI [JP], et al
- [A] EP 1808714 A1 20070718 - FUJINON CORP [JP]
- [A] JP 2001100002 A 20010413 - CANON KK
- [A] JP S6180203 A 19860423 - TOSHIBA CORP
- [A] JP S6032001 A 19850219 - MINOLTA CAMERA KK
- [A] JP 2005338366 A 20051208 - OLYMPUS CORP
- [A] JP 2006228285 A 20060831 - KONICA MINOLTA OPTO INC
- [AD] JP 2002267801 A 20020918 - CANON KK
- [X] TIKHONRAVOV A V ET AL: "APPLICATION OF THE NEEDLE OPTIMIZATION TECHNIQUE TO THE DESIGN OF OPTICAL COATINGS", 1 October 1996, APPLIED OPTICS, OPTICAL SOCIETY OF AMERICA, US, PAGE(S) 5493 - 5508, ISSN: 0003-6935, XP009053835
- [A] ALEXANDER TIKHONRAVOV ET AL: "Development of the needle optimization technique and new features of OptiLayer design software", 4 November 1994, PROCEEDINGS OF THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING (SPIE), SPIE, USA, PAGE(S) 10 - 20, ISSN: 0277-786X, XP007915354

Cited by

EP2634610A4; WO2022090228A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA RS

DOCDB simple family (publication)

EP 2128658 A2 20091202; EP 2128658 A3 20110511; US 2009290219 A1 20091126; US 2012276350 A1 20121101; US 8248699 B2 20120821

DOCDB simple family (application)

EP 09006854 A 20090520; US 201213549086 A 20120713; US 47021609 A 20090521